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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/817,138	04/02/2004	Mark Wilson	CEDM 8002	1500
321	7590	09/06/2006	EXAMINER	
SENNIGER POWERS ONE METROPOLITAN SQUARE 16TH FLOOR ST LOUIS, MO 63102			FEELY, MICHAEL J	
			ART UNIT	PAPER NUMBER
			1712	

DATE MAILED: 09/06/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/817,138

Applicant(s)

WILSON ET AL.

Examiner

Michael J. Feely

Art Unit

1712

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 16 June 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-14 and 18-41 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 18-41 is/are allowed.
- 6) ☒ Claim(s) 1-10 and 12-14 is/are rejected.
- 7) ☒ Claim(s) 11 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 02 April 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                       | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## DETAILED ACTION

### *Pending Claims*

Claims 1-14 and 18-41 are pending.

### *Preamble Limitations*

1. In claims 1-14, the recitation *“for curing an underfill that comprises an epoxy resin and for fluxing a solder during a solder assembly of an electronic component to an electronic device substrate,”* has been given little patentable weight because the recitation occurs in the preamble. A preamble is generally not accorded patentable weight where it merely recites the purpose of a process or the intended use of a structure, and where the body of the claim does not depend on the preamble for completeness but, instead, the process steps or structural limitations are able to stand alone. See *In re Hirao*, 535 F.2d 67, 190 USPQ 15 (CCPA 1976) and *Kropa v. Robie*, 187 F.2d 150, 152, 88 USPQ 478, 481 (CCPA 1951).

In the instant case, the preamble merely recites the intended use of the curative, wherein the prior art can meet this future limitation by merely being capable of such intended use.

2. In claims 18-35, the recitation *“for application between an electronic component and an electronic device substrate to assist in solder assembly of the electronic component to the electronic device substrate and to provide mechanical shock resistance and thermal cycling resistance,”* has been given significant patentable weight. Although it cites the intended use of the underfill solution, the body of the claim breathes life into the preamble language.

***Previous Claim Rejections - 35 USC § 102***

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. The rejection of claims 1-10 and 12-14 under 35 U.S.C. 102(b) as being anticipated by Marshall et al. (US Pat. No. 3,746,686) has been overcome by amendment.

***Previous Claim Rejections - 35 USC § 103***

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. The rejection of claim 11 under 35 U.S.C. 103(a) as being unpatentable over Marshall et al. (US Pat. No. 3,746,686) has been withdrawn.

***Claim Rejections - 35 USC § 103***

7. Claims 1-10 and 12-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Marshall et al. (US Pat. No. 3,746,686).

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Regarding claims 1-10 and 12-14, Marshall et al. disclose: **(1)** a curative comprising a salt that is a reaction product of an imidazole component and a *polycarboxylic acid component having from 2 to 20 carbon atoms per molecule* (column 4, line 10 through column 5, line 57, specifically column 4, lines 59-62);

**(2)** wherein the imidazole component is selected from the group consisting of imidazole, isoimidazole, and a substituted imidazole (column 4, lines 51-58);

**(3)** wherein the imidazole component is selected from an alkyl-substituted imidazole and an aryl-substituted imidazole (column 4, lines 51-58);

**(4)** wherein the imidazole component is selected from an alkyl-substituted imidazole having up to about 17 carbon atoms in the alkyl substituent and an aryl-substituted imidazole having up to about 10 carbon atoms in the aryl substituent (column 4, lines 51-58);

**(5)** wherein the imidazole component is selected from an alkyl-substituted imidazole having up to about 8 carbon atoms in the alkyl substituent and an aryl-substituted imidazole having up to about 10 carbon atoms in the aryl substituent (column 4, lines 51-58);

**(6)** wherein the imidazole component is an alkyl-substituted imidazole component selected from the group consisting of *see claim for list* (column 4, lines 51-58);

**(7)** wherein the imidazole component is selected from the group consisting of 2-ethyl-4-methyl-imidazole and 1-cyanoethyl-2-ethyl-4-methyl-imidazole (column 4, lines 51-58);

**(8-10)** wherein the carboxylic acid component is a *polycarboxylic acid component having from 2 to 20 carbon atoms per molecule* (column 4, line 10 through column 5, line 57, specifically column 4, lines 59-62);

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(12) wherein the salt comprises a weight ratio of the imidazole component to the carboxylic acid that is between about 1:0.1 to 1:4 (column 5, lines 30-40);

(13) wherein the salt comprises a weight ratio of the imidazole component to the carboxylic acid that is about 1:2 (column 5, lines 30-40); and

(14) wherein the curative is substantially free of an anhydride (column 4, line 10 through column 5, line 57: *acid or anhydride is used*).

Marshall et al. disclose, "The acid portion of the salt is derived from a polycarboxylic acid or anhydride which contains *from 2 to 20 carbon atoms*. They may be *aliphatic or aromatic, saturated or unsaturated*," (column 4, lines 59-62). They fail to explicitly disclose: (1 & 8-10) a dicarboxylic acid having at least 20 carbon atoms per molecule.

It should be noted that the reference anticipates the carbon range of the claimed carboxylic acid component (when there are 20 carbon atoms present). However, the reference does not explicitly disclose a dicarboxylic acid. Instead, they disclose a polycarboxylic acid.

One skilled in the art would have recognized that the disclosure of a polycarboxylic acid encompasses any carboxylic acid compound featuring more than one carboxyl group. These compounds would have included dicarboxylic acids. In essence, this represents an overlapping of ranges. In light of this, it has been found that, "[A] prior art reference that discloses a range encompassing a somewhat narrower claimed range is sufficient to establish a *prima facie* case of obviousness," – see MPEP 2144.05.

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to use a dicarboxylic acid having at least 20 carbon atoms per molecule in the curative

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of Marshall et al. because they disclose the use of a *polycarboxylic* acid having from 2 to 20 carbon atoms. The disclosure of *polycarboxylic* encompasses *dicarboxylic*.

### ***Response to Arguments***

8. Applicant's arguments with respect to claims 1-10 and 12-14 have been considered but are moot in view of the new ground(s) of rejection.
9. Applicant's argument with respect to claim 11 is persuasive.

### ***Allowable Subject Matter***

10. Claims 18-41 are allowed.
11. Claim 11 is objected to for being dependent from a rejected claim.

### ***Conclusion***

12. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event,

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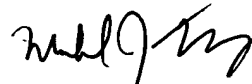
however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

***Communication***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael J. Feely whose telephone number is 571-272-1086. The examiner can normally be reached on M-F 8:30 to 5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Randy Gulakowski can be reached on 571-272-1302. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



Michael J. Feely  
Primary Examiner  
Art Unit 1712

September 4, 2006

**MICHAEL FEELY  
PRIMARY EXAMINER**